

## SCHOOL OF ENERGY AND ENVIRONMENTAL STUDIES

**Program Code: EN8X**

**Program Title: Master of Philosophy (M Phil) Energy & Environment**

The school has started its M Phil. programme in the year 1997. The programme has been duly approved by the UGC, New Delhi

### **Objectives:**

Energy & Environment Management is an interdisciplinary field of Energy & Environment that focuses on the following objectives:

- To provide trained manpower with strong knowledge and R & D capabilities in the Energy and Environment related areas.
- To develop the capability to start own work/business
- To train manpower for developing projects specifically related to Clean Development Mechanism (CDM).
- To undertake R & D and consultancy work in the Energy and Environment related fields.
- To introduce to the industry various Energy & Environment friendly efficient technologies and provide help in implementing energy conservation measures and save of Environment.

### **Eligibility:**

Post Graduate Degree (Environmental Science, Chemistry, Life science, Bio-Chemistry, Bio-technology and branches of Environmental science) with minimum of 55% marks or equivalent degree. Reservation relaxations as per M P Government Rules.

**Age Limit:** There is no age limit bar.

### **Admission Procedure:**

Admissions will be given on the basis of the merit of **M. Phil.** Entrance Test (DET) conducted by DAVV followed by interview. The selected candidates are required to apply for the M.Phil. registration on prescribed Pro- forma downloadable from the university website. The duly filled registration form along with the necessary documents and certificates shall be submitted to School of Energy and Environmental Studies along the receipt of fee payment.

### **Seats:**

Total seats-13; Reservation for SC/ ST/OBC as per MP Government Rule

**Duration:** Two Semesters (One Year).

### **Fee Structure- Batch (2019-20):**

#### **M. Phil. in Energy & Environment**

S.N.	Fees head	Rs.	Remarks
1	Academic Fees	12000	Per Semester
2	Development and Maintenance Fee	3500	Per Semester

3	Examination Fees	2500	Per Semester
4	Caution money (Refundable)	4000	Once in 1 <sup>st</sup> semester
5	Identity Card Fee	100	Once in 1 <sup>st</sup> semester
6	Student Services Fee	3500	Per Semester
7	Examination Fee for Final Dissertation evaluation	3000	Per Semester
8	Enrolment Fee (if applicable)	100	Through MPOne <a href="https://davv.mponline.gov.in">https://davv.mponline.gov.in</a> (Only for those who do not have Enrolment No. of DAVV)
9	Portal Fee	40	Per transaction
10	Eligibility fee (if applicable)	-	Please contact Academic Section, DAVV, RNT Marge
All of the above mentioned fees shall be paid through <a href="https://davv.mponline.gov.in">https://davv.mponline.gov.in</a>			

- Alumni Fees of Rs. 300/- will be charged additionally in each semester.
- Hostel Fee and Central Library Fee will be extra

### Program Structure (2019-21) First Semester

Course Code	Course Title	Credits (L+T+P)	Hours	Faculty
<b>EN8X -701</b>	Review of Related Literature	04 (0+0+4)	64	SPS/RNS/RC
<b>EN8X-702</b>	Research Methodology	04(3+1+0)	64	RNS
<b>EN8X -703</b>	Computer Applications	04(2+1+1)	64	GF
<b>EN8X -704</b>	Advancement in Energy Systems & Technologies	04(3+1+0)	64	SPS
<b>EN8X -705</b>	Advancement in Environment Systems & Technologies	0404(3+1+0)	64	RC
<b>EN8X-706</b>	Comprehensive Viva-Voce	04		
Total		<b>24</b>		

### Second Semester

Course Code	Course Title	Credits (L+T+P)	Hours	Faculty
<b>EN8X-707</b>	Seminar	04 (0+0+4)	64	SPS/RNS/RC
<b>EN8X-708</b>	Term Paper / Assignments	04 (0+0+4)	64	SPS/RNS/RC
<b>EN8X-709</b>	Dissertation/Major Project	12 (0+0+12)	64	SPS/RNS/RC
<b>EN8X-710</b>	Comprehensive Viva-Voce	04		
Total		<b>24</b>		

**M. Phil. (Energy and Environment)**

**Year 2019-2020**



# **Syllabus**

**School of Energy & Environmental Studies,  
Devi Ahilya Vishwavidyalaya,**

Takshashila Campus, Khandwa Road, Indore-452 017(M.P)  
Ph: 0731-2460309, 2462366, Fax: 0731-2467378. [www. dauniv.ac.in](http://www.dauniv.ac.in)

**M. Phil. (ENERGY AND ENVIRONMENT)**  
**YEAR: 2019-2020**

<b>Eligibility</b>	Post Graduate Degree (Environmental Science, Chemistry, Life science, Bio-Chemistry, Bio-technology and branches of Environmental science) with minimum of 55% marks or equivalent degree. Reservation relaxations as per M P Government Rules.
<b>Duration</b>	2 Semesters
<b>Seats</b>	13

<b>COURSE No.</b>	<b>COURSE TITLE</b>	<b>Credits (L+T+P)</b>
<b>CORE THEORY COURSES</b>		
<b>Semester - I</b>		
<b>EN8X -701</b>	Review of Related Literature	04 (0+0+4)
<b>EN8X -702</b>	Research Methodology (Theory)	04 (3+1+0)
<b>EN8X-703</b>	Computer Applications	04 (2+1+1)
<b>EN8X-704</b>	Advancement in Energy Systems & Technologies	04 (3+1+0)
<b>EN8X-705</b>	Advancement in Environment Systems & Technologies	04 (3+1+0)
<b>EN8X-706</b>	Comprehensive Viva Vice	04
<b>TOTAL CREDITS</b>		<b>24</b>
<b>Semester - II</b>		
<b>EN8X-706</b>	Seminar	04 (0+0+4)
<b>EN8X-707</b>	Term Paper / Assignments	04 (0+0+4)
<b>EN8X-708</b>	Dissertation/Major Project	12 (0+0+12)
<b>EN8X-709</b>	Comprehensive Viva Vice	04
<b>TOTAL CREDITS</b>		<b>24</b>
<b>GRAND TOTAL</b>		<b>48</b>

**EN8X -701: Review Paper**

**Credits 4 (64 Hours)**

Students supposed to prepare a Review Paper. Title of the review paper may be mutually decided by student and concern Supervisor. At the end of the Semester Review Paper needs to be presented in front of DRC and concern supervisor.

## EN8X -702: Research Methodology

4 Credits (64 Hrs)

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### UNIT I

Foundation of Research: Motivation and objectives – Research methods Vs Methodology. Types of research – Descriptive vs. Analytical, Applied vs. Fundamental, Quantitative vs. Qualitative, Conceptual vs. Empirical.

### UNIT II

Research Formulation – Defining and formulating the research problem - Selecting the problem - Necessity of defining the problem - Importance of literature review in defining a problem – Literature review – Primary and secondary sources – reviews, treatise, monographs-patents – web as a source – searching the web - Critical literature review – Identifying gap areas from literature review - Development of working hypothesis.

### UNIT III

Theory of Sampling - Population and sample Preliminary Ideas of Random, Stratified, Systematic and Multistage including allocation of resources- Parameter and statistics – Sampling distribution and standard Error.

### UNIT IV

Theory of Testing Hypothesis: Meaning, Basic concepts, Null hypothesis – Alternate Hypothesis – Two types of errors levels of significance of a test – power of a Test. Limitations of Tests of hypothesis. Student T test, F test, Z test, ANOVA Table, Chi Square test est.

### UNIT VI

Correlation and Regression – Persons Coefficient for Raw and frequency, Data - Spearman's Rank Correlation Coefficient – Regression lines and their use – curve fitting – principle of Least squares- fitting of straight line – length – weight Relationship and Bertrand Growth equation – operational Research and its application, Measurement in Research.

### UNIT VII

Research Modeling: Types of Models, Model building and stages, Data consideration and testing, Heuristic and Simulation modeling. Energy and Environmental System modeling

Report Writing: Pre writing considerations, Thesis writing, Formats of report writing, formats of publications in Research journals.

### Recommended Books:

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1. Environmental systems- Benett R.J.
  2. Studies in Environmental Mathematics- Sinha D.K. Mishra A.
  3. Mathematical Modeling- Kapur S.N.
  4. Research methodology Methods & Techniques - C R Kothari
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## EN8X-703: Computer Applications

(04 credits)

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### **Unit I: Introduction to MS Office Automation Tools**

Use and application of MS office automation tools like MS Word, MS Excel, MS Power point, MS Access.

### **Unit II: MATLAB-I**

Introduction to MATLAB, Tutorial lessons, Matrices and Vectors-Scalars and vectors, Multidimensional matrices and arrays, Matrix Manipulation, Matrix and array operations

### **Unit III: MATLAB-II**

Matlab Graphics- Introduction, 2D-Plots, Multiple plots, specialized 2D plots and 3D plots. Control structure, Writing programs and Functions.

### **Unit IV: Application of MATLAB in design of Energy Systems**

Photovoltaic system, Biogas based systems, Biomass based systems.

### **Unit V: Application of MATLAB in design of Environmental Systems**

Waste Water systems, Air pollution systems, noise pollution systems, solid waste management systems

### **Recommended Books:**

1. Using MS-Office2000-Woody Leonhard.
2. The Computer Guide to MS Office – Ron Monsfield.
3. Environmental Systems – Benett R.J.
4. Studies in Environmental Mathematics –Sinha D. K. and Mishra A.
5. A Handbook of EMIS, Published by the Office of Energy Efficiency of Natural Resources Canada.
6. Getting started with MATLAB 7 A Quick Introduction for Scientists and Engineers – RudraPratap.
7. MATLAB and its applications in Engineering- RK Bansal, AK Goel, MK Sharma.

**EN8X-704:Advancement in Energy Systems & Technologies**

**EN8X-705:Advancement in Environment Systems& Technologies**

**EN8X-707: Seminar****Credits 4 (64 Hours)**

Students supposed to prepare Two (02) Seminars on recent topics related to Energy and environment and submit a hard copy {(Numbers of copy supposed to be submitted: 04 (Loose Binding)} of the same. Title of the Seminar may be mutually decided by student and concern Supervisor. At the end of the Semester, Seminar should be presented in front of Departmental Committee and concern supervisor. A hard copy of the Seminar Report {(Numbers of copy suppose to be submitted: 04 (Loose Binding)} should be submitted to the SEES Examination In charge before oral presentation.

**EN8X-708:Term Paper/ Assignment****Credits 4 (64 Hours)**

Student will have to write a term paper under the guidance of a faculty member, on the subject/ topic mutually decided by student and concern Supervisor and submit a hard copy{(Numbers of copy supposed to be submitted: 04 (Loose Binding)} of the same. It should cover basic concept of the research and issues of investigation. At the end of the Semester Term Paper should be presented in front of Departmental Committee and concern supervisor. A hard copy of the Term Paper Report {(Numbers of copy supposed to be submitted: 04 (Loose Binding)} should be submitted to the SEES Examination In charge before oral presentation.

Or

An assignment has to be submitted in the form of Hard & Soft Copy on the subject/ topic decided by concern Supervisor and submit a hard copy {(Numbers of copy supposed to be submitted: 04 (Loose Binding)} of the same. At the end of the Semester Assignment should be presented in front of Departmental Committee and concern supervisor. A hard copy of the Assignment {(Numbers of copy suppose to be submitted: 04 (Loose Binding)} should be submitted to the SEES Examination In charge before oral presentation.

**EN8X-7059: Dissertation/Major Project**

The dissertation shall comprise of individual and original work by a student under the guidance of a faculty member and /or Co-supervisor (Consultant/ Scientist) on a topic which shall preferably related to an area of his/her interest. The dissertation shall carry a weight of twenty credits and shall be awarded grades as per University.

Prior to submission of final report, the students have to prepare their Synopsis with due consultation of their respective Supervisor. Topic or guide once finalized will not be changed (under extreme condition can be changed by Departmental Committee only). Only those students would be allowed to submit their final dissertation who maintain regularity in their attendance and remain in constant touch with their respective Supervisor. The students have to strictly follow the following pattern of their Synopsis and Dissertation/ Thesis submission.

### **Format of Synopsis**

1. Title
2. Need of the project
3. Introduction
4. Review of literature
5. Objectives
6. Methodology
7. Expected Outcomes

### **Format of Dissertation/ Major Project**

1. Title
2. Introduction
3. Review of Literature
4. Objectives
5. Methodology
6. Analysis of data
7. Result & Discussions
8. Conclusion
9. Suggestions
10. References

**Note:** Numbers of final Thesis/ dissertation copy supposed to be submitted: 04 (Hard Binding)

Cover page Color of final Thesis/ Cover page Color of final Thesis/ dissertation:

